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DOI:

[10.1017/S1352465817000030](https://doi.org/10.1017/S1352465817000030)

Document Version

Peer reviewed version

[Link to publication record in King's Research Portal](#)

Citation for published version (APA):

Van Hout, M. C., Norman, I., Rich, E., & Bergin, M. (2017). Experiences of Codeine Use, Misuse and Dependence: Application of Liese and Franz's Cognitive Developmental Model of Substance Abuse. *Behavioural and Cognitive Psychotherapy*, 1-15. <https://doi.org/10.1017/S1352465817000030>

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BEHAVIOURAL AND COGNITIVE PSYCHOTHERAPY



Experiences of Codeine Use, Misuse and Dependence: Application of Liese and Franz's Cognitive Developmental Model of Substance Abuse.

Journal:	<i>Behavioural and Cognitive Psychotherapy</i>
Manuscript ID	BCP-01217-16.R4
Manuscript Type:	Main
Keywords:	Codeine, pain, addiction, cognitive behavioural therapy, opioid

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Experiences of Codeine Use, Misuse and Dependence: Application of Liese and Franz’s Cognitive Developmental Model of Substance Abuse

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ABSTRACT

Background

Misuse of codeine containing medicines is an emerging public health issue.

Aims

We present the application of Liese and Franz’s (1996) cognitive developmental model of substance abuse to the trajectory from legitimate codeine use for pain, toward that of therapeutic and other forms of misuse, and physical and psychological dependence. It illustrates a cognitive behavioural analysis of the experiences of codeine misusers – which ‘surfaces’ the specific beliefs, thoughts, emotions and behaviours of this group of hidden codeine dependent individuals, who are distinct and unique from other opioid dependent cohorts.

Methods:

In-depth one-to-one interviews with codeine misusers and dependent individuals in Ireland (n=21), and South Africa (n=25) are analysed and applied to Liese and Franz’s (1996) cognitive developmental model of substance abuse.

Results

Misuse and dependence pathways are maintained by the interplay between physiological determinants relating to pain, withdrawal and tolerance, and psychological influences such as therapeutic need, pre-empting of anticipated physical pain, pleasure from the dreamy sedative opiate effect of codeine and relief of emotional distress. Progression toward habitual use and misuse for therapeutic and intoxication purposes appears mediated by external environmental triggers pertaining to availability, internal meta-cognitions around physical pain and emotional distress, and increasing importance of codeine in the life of the user.

Conclusion

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The concept mapping of codeine misuse and dependence presented here could provide psychological therapists working with individuals experiencing problems with codeine, misusing codeine and those with iatrogenic dependence, with an enhanced understanding of the key concepts involved in misuse and recovery pathways.

Key Words

Codeine, pain, addiction, cognitive behavioural therapy, opioid

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INTRODUCTION

Global trends in the misuse of prescription and over the counter (OTC) opioids are driven by prescribing trends, forms of patient self-medication and public availability (Collins and McAllister, 2006; Cooper, 2013a). Misuse definitions vary, but are broadly defined as *‘the use of a medicine, with or without a doctor’s prescription, clearly outside of accepted medical practice or guidelines, for recreational purposes or in the framework of self-medication, in greater dosages or for longer periods than were prescribed, in which the risks and problems associated with use outweigh the benefits’* (Casati, Sedefov and Pfeiffer-Gerschel, 2012:229-230). Public misuse and potential for misuse of codeine containing medicines in particular has received attention in recent times in Australia, the United Kingdom, Ireland, France and South Africa (McAvoy, Dobbin and Tobin, 2011; Nielsen et al., 2015c; Stannard, 2013; Tobin, Dobbin and McAvoy, 2013). Codeine, or 3-methylmorphine, is a short acting, weak to mid-range opiate (Tremlett, Anderson and Wolf, 2010). Codeine containing medicines are available (at the time of writing) in OTC formulations for the symptomatic relief of mild to moderate pain or cough (Derry, Karlin and Moore, 2013), and at varying strengths per country regulatory regime (Van Hout and Norman, 2015c).

Typical side effects of codeine include euphoria, altered perceptions and emotional responses to pain, and sedation, and development of tolerance within relatively short time-frames on repeated use (Babalonis, Lofwall, Nuzzo, Siegel and Walsh, 2013; Frei, Nielsen, Dobbin, and Tobin, 2010; Nielsen, Cameron and Pahoki, 2010; Romach, Sproule, Sellers, Somer and Busto, 1999; Sproule, Busto, Somer, Romach and Sellers, 1999;). Harms relating to excessive and/or long term use of codeine containing medicines are well documented (Robinson, G. M., Robinson, S., McCarthy and Cameron, 2010), and often occurring in individuals with no history of substance use disorders or co-morbidity (Van Hout et al.,

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2014). Clinical profiles vary and are distinct from other opiate dependents, but include all ages, genders, alcohol and poly substance users, patients with chronic pain and/or underlying psychiatric conditions (Agyapong et al., 2013; ; Myers, Siegfried and Parry, 2003; Nielsen et al., 2008; Nielsen, Cameron and Lee, 2011; Nielsen et al., 2015 a:b; Otto et al., 2009; Robinson et al., 2010; Roussin, Bouyssi, Pouche, Pourcel, & Lapeyre-Mestre, 2013; Thekiso and Farren, 2010). Problematic codeine users do not easily recognise problematic use or dependence, and view themselves as different to other substance abusers (Cooper, 2013b; Marr and Hill, 2015; Nielsen et al., 2010; Nielsen et al., 2015a; Pates, McBride, Li and Ramadan, 2002; Romach et al., 1999).

Building on this 'uniqueness', we used concept mapping (Liese and Esterline, 2015) to apply Liese and Franz's (1996) cognitive developmental model of substance abuse to the accounts of two groups of individuals from Ireland (Van Hout, Horan, Santlal, Rich and Bergin, 2015b) and South Africa (Van Hout, Rich, Dada Bergin, 2015d) that experienced codeine use, misuse and dependence. Concept mapping according to Liese and Esterline (2015) advocate case mapping which when shared with the patient, can function as an intervention to support behaviour change by presenting methodical generated graphic representations of the client's dynamic relations and pathways toward substance dependence. Ultimately this mapping exercise could be used to better integrate specific cognitive and behaviour change strategies for those experiencing codeine misuse and dependence, and for therapists to better understand the unique challenges of this OTC opiate drug as it relates to the role of feelings and emotions as influences for use, environmental influences on behaviour change, and limits of self-control (Borland, 2014). We chose the model designed by Liese and Franz (1996) as it is compatible within current opiate substitution treatment (OST) and harm reduction approaches to treatment (Liese, 2014).

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METHODS

Aim

To apply Liese and Franz's (1996) cognitive developmental model of substance abuse to the in-depth narrative accounts of two samples of individuals from Ireland and South Africa experiencing codeine misuse and dependence. Ethical approval in South Africa was granted by the Ethics Committee of the South African Medical Research Council and by Waterford Institute of Technology and the National Drug Treatment Centre Board (NDTCB) in Ireland. Both studies were conducted in two very distinct regulatory regimes and aimed to garner unique individual and collective lived experiences of codeine misuse and dependence, from purposive samples of adult codeine misusers and individuals dependent on codeine (actively misusing and in recovery) in Ireland (n=21) and South Africa (n=25). Sampling for both the Irish and South African studies continued until saturation of the data occurred. We utilised extant narratives from these national studies and applied Liese and Franz's (1996) cognitive developmental model of substance abuse to concept map a cognitive behavioural analysis of the experiences of codeine misusers – which 'surfaces' their specific beliefs, thoughts, emotions and behaviours.

Selection of Participants

Recruitment of participants was facilitated by the National Head Office of the South African Council on Alcoholism and Drug Dependence (SANCA) and the NDTCB in Ireland which oversee national addiction treatment systems in respective countries. Both national treatment organisations nominated key gatekeepers in each treatment centre to provide their patients with information on the research study, and ask if they wished to partake in an interview. Informants were eligible for interview if they were: citizens of the country in which the research was conducted (Ireland or South Africa), 18 years of age or more, reported using

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codeine in excess of accepted medical guidelines, and scored 5 or more on the Severity of Dependence Scale (SDS) (Gossop et al., 1995), a measure of the psychological components of codeine dependence; a score of 5 or more on the SDS has been found to identify problematic codeine use with a high degree of accuracy (Nielsen et al., 2010). The demographic profile of the participants is reported in Table 1.

Insert Table 1 about here

Interviews

Interviews lasted between 30 and 90 minutes, and were conducted in treatment and private settings. The interview guide was developed based on the literature contained in an extensive scoping review on codeine conducted by the team (Van Hout et al., 2014). Questions centred on participant choices and decision making to use codeine (prescribed or over the counter), experience of sporadic and continued codeine use and misuse, reinforcers for use, misuse and dependence, sourcing, awareness of risk and abuse potential, adverse consequences and accessing of treatment services.

Analysis

Narratives were combined and analysed using the Empirical Phenomenological Psychological (EPP) five-step method (Karlsson, 1995). This method was used to interpret the meaning structure of lived psychological phenomena relating to the subjective codeine misuse and dependence experience. A dialectic understanding of the whole picture and it's part-components was used to create an incremental understanding of the relationship between the individual and the codeine containing medicine. Above the thematic level, higher levels of abstraction were grounded in user lack of awareness of habit forming use, self-

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legitimisation of use and the pre-empting of physical pain, management of emotional distress, and the invisible and isolating nature of dependence.

PSYCHOLOGICAL MODEL OF CODEINE MISUSE AND DEPENDENCE

Shaffer, LaPlante, and Nelson (2012) and Shaffer et al., (2004) view addiction as a syndrome with common causes, multiple opportunistic expressions, and with shared neurobiological and psychosocial antecedents, and experiences. This syndrome is cognisant of the role of individual characteristics, drug used, and environmental factors influencing transitions from use to misuse, and ultimately development of dependence. West (2005:2013) whilst recognising the heterogeneous nature of mechanisms underlying addiction, underscores the effect of motivational dysfunction through the unstable presence of responses, reflexes, impulses/inhibitory forces, desires, evaluations (beliefs), and overarching plans which interact with the individuals internal and external environment. Addictive behaviours (such as misuse of codeine) are viewed by Beck, Wright, Newman and Liese, (1993) as emerging from interplay between layers and levels of substance related (anticipatory, relief-oriented, and permissive) and facilitative beliefs, and high risk situations which activate automatic thoughts, and feelings of urges and cravings to use, within a cycle of addiction.

A complex interaction between cognitions (beliefs, thoughts, schemas), opinions, expectations, values, suppositions, behaviours, emotions, social relationships, cultural influences and physiological processes occurs (Alford and Nocross, 1991; Beck and Alford, 2000). Beck's cognitive model of addiction underpins cognitive therapy for substance use, through behavioural strategies centring on avoiding high risk situations, finding new coping mechanisms, and working with substance related beliefs. In Beck's model, the expectancies of substances are a key difference between those using problematically and those not, and with dysfunctional beliefs playing a role in the generation of urges (Beck, Wright, Newman

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and Liese, 1993; Liese and Franz, 1996), with beliefs and expectancies interacting with the emotional, environmental and physiological systems, and facilitating the development and maintenance of the disorder (Liese, Beck and Seaton, 1999).

The model, presented in Figure 1, applies Liese and Franz's (1996) cognitive developmental model of substance abuse, to concept map the cognitive behavioural analysis of the distinct and unique experiences of codeine misusers – which 'surfaces' their specific beliefs, thoughts, emotions and behaviours around misuse and dependence on the legitimately used OTC opiate drug, codeine. Liese and Franz's (1996) model includes a developmental component preceding the point of continued use activated by 'Activating Stimuli' (See Figure 1). These earlier factors include early life experiences, development of schemas, basic and conditional beliefs, exposure to and experimentation with substances and the development of drug related beliefs. This developmental process can influence potential vulnerability for codeine use, misuse and dependence. Seven stages are then depicted in the model of acute periods of codeine use, misuse and dependence with individuals not necessarily following a linear trajectory through the stages identified. The stages are (1) activating stimuli for codeine use; (2) beliefs activated; (3) automatic thoughts; (4) transitioning to codeine misuse and dependence (urges and cravings) (5) enabling beliefs; (6) instrumental strategies, and (7) continued codeine misuse and dependence. See Figure 1.

Insert Figure 1 about here

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Developmental Stages of Use and Misuse

The developmental component before point of ‘continued use’ (see Figure 1) explores early life experiences, development of schemas, basic beliefs, exposure to and experimentation with substances and the development of drug related beliefs. Early life experiences reported by participants centred on the ‘*loss of a parent*’ as a child and the emotional isolation experienced (South African Male , 45 yrs); ‘*parental disharmony*’ (South African Female, 43yrs; Irish Male, 31 yrs) and its negative impact on children; history of parents with substance misuse and dependence (South African Male, 47 yrs; Irish Male, 31 yrs; Irish Female, 42 yrs); parental physical and emotional abuse of children (South African Male, 36 yrs; South African Male, 47 yrs; Irish Male, 31 yrs); history of childhood behavioural problems and the use of medications to manage such challenging behaviours (South African Male, 42 yrs); ‘*religion*’ and associated beliefs formed and held that alcohol was forbidden but it was acceptable to use drugs that were legitimately available to purchase over the counter (South African Male, 45yrs); to the ‘*culture of sports*’ and the social acceptance for some sports, for example, ‘*rugby*’ and its association with ‘*alcohol use and misuse*’ (South African Male, 37 yrs).

Such early life experiences led some participants to develop beliefs that negatively impacted upon them. For example, feeling ‘*emotionally isolated*’ resulted from parental loss; ‘*low self-esteem*’ and feelings of worthlessness as a consequence of physical and emotional abuse from parents who misused or were dependent on substances. Exposure to and experimentation with substances occurred with many individuals reporting exposure ranging from parental or sibling addictions to alcohol, nicotine and other substances to participants themselves experimenting in the past as teenagers and young adults with ‘*ecstasy, ... speed,*’ (Irish Female, 26 yrs) *cannabis*’ (Irish Female, 26 yrs; Irish Male, 38 yrs; Irish Female, 42

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1
2
3 yrs) and 'cocaine' (Irish Male, 50 yrs) to their own legitimate use of over the counter and
4
5 prescribed medications for physical conditions related to pain symptomology.
6

7
8 Specific positive drug related beliefs were developed and maintained in relation to initial
9
10 codeine use. For example, some participants described how initial use of codeine containing
11
12 medicines would make them feel more socially 'relaxed' (South African Male, 37 yrs; South
13
14 African Male, 41 yrs; South African Male, 47yrs; South African Male, 74 yrs) similar to the
15
16 effects of alcohol, and also, would enhance their self-confidence. One 31 year old male Irish
17
18 participant describes how:
19

20
21 *'I was never confident enough... to just go out and talk to people.... And then when I*
22 *was out, I used to take codeine and... I would be very chatty. It's almost like you're*
23 *drunk...'*
24

25
26 A 42 year old male Irish participant highlights how over time he increased his use of codeine
27
28 to sustain feelings of confidence as were previously experienced:
29

30
31 *'... three...just twenty four [codeine tablets] until they were gone but then I was*
32 *getting to [the] sixties and I wasn't getting the effect anymore, well I was getting*
33 *it a bit but I wasn't... as confident as I would be, ...[then]... stretching up to*
34 *eighty four [codeine tablets] ...'*
35
36

37 In sum, early life experiences, social norms and schemas about the cultural acceptability of
38
39 drugs, combined with exposure to and experimentation with addictive behaviours appears to
40
41 lead to positive beliefs about codeine which reinforces continued use.
42
43
44
45

46 **Activating Factors**

47
48 We distinguish between internal and external precipitating factors that predispose the person
49
50 to risk for using codeine containing medicines. Internal precipitating factors occur within the
51
52 individual, while external factors are contextualised beyond the individual's psychobiography
53
54 and are situated either within relational or social contexts or both. Examples of internal
55
56 factors are bio-psycho-social in origin and include individuals experiencing physical pain,
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emotional distress, depression, anxiety, stress related conditions, low self-esteem and a sense of an ‘*internalised loss*’ of control resulting from adverse life events and the use of codeine for reducing the perceived impact of psychological trauma.

External precipitating factors could include adverse life events such as lone parenting, unemployment, marital and relationship disharmony and divorce. These experiences of ‘*internalised loss*’ lead to relational conflict within social networks often resulting in social isolation and loss of support networks. Such internal and external precipitating factors are situated within a wider context of the ‘*legitimacy*’ status of codeine products, ‘*advertising of products*’, ‘*pharmacy availability*’ and ‘*over the counter*’ access to codeine containing medicines.

Beliefs activated

Many codeine dependent individuals do not realise they are dependent. Anticipatory and relief oriented beliefs are formed as a consequence of internal and external activating factors. Anticipatory beliefs that are convincingly held, centre around the efficacy and pleasures associated with use and misuse whereby codeine is viewed as ‘*my helper*’ and ‘*companion*’. The presence of emotional pain and self-legitimation of use is a common belief.

‘Pain killers are not just for what is written on the back of the pack, they should add also pain relief from anxiety, depression and heartache.’ (Irish Female, 26yrs)

Automatic beliefs that codeine containing medicines can ‘*manage discrete episodes of physical pain*’, ‘*deny or suppress psychological symptoms*’ and ‘*lift up moods*’ are held. Such beliefs range from relief oriented beliefs, and involve the expectation of reprieve from physical and emotional symptoms, for example, helping them to relax, to beliefs relating to

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mood elevation and regulation. Such automatic or involuntary thoughts sustain the convincingly held beliefs that *'codeine is my helper'* and *'codeine is my companion'*.

'I wasn't expecting the high I got but I was very happy with its effects, it felt like the missing piece to my life.' (Irish Female, 26yrs)

Automatic thoughts

Involuntary or automatic thoughts are described as a consequence to deeply held beliefs, such as *'codeine is my helper'* and *'codeine is my companion'*. Such beliefs contribute to the development of the role of codeine as *'crutch'*; *'friend'* and *'helper'* in correspondence with dependence and to the detriment of *'real life social relations'*. Automatic thoughts triggered that are brief and spontaneous in relation to such basic beliefs include *'feel better'*; *'improved life'*; *'get them'*; *'a rush'*. As two Irish participants stated:

'I always deep down knew I was abusing it but some of my thoughts were, so what? It's serving you a purpose, it's making life better, it's only an over the counter drug. I used it for just under a year' (Irish Male, 30yrs).

'I used to take it [codeine tablets] then just to make myself feel better. When I used to get up and feel crap, I'll take it and feel instantly better. That is what I used to do. That is what I still do; and now it's like it has become part of my daily routine in my daily life. ... I'd get very uplifted when I was using that stuff [codeine tablets]' (Irish Male, 31 yrs).

Images as automatic thoughts were sometimes described, for example, *'fizzy effect'* following use of soluble codeine medications and its pleasurable effects. One male participant described how *'soluble codeines in water with that fizzy effect... it gave me the hit and it gave me a rush'* (Irish Male, 38 yrs). This association between drugs related beliefs and thoughts lead the individual to desire codeine containing medicines and *'...to consume in order to function throughout the day'*. This creates a context whereby certain convincingly held beliefs are maintained.

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Transitioning to misuse and dependence

Many individuals described their use of codeine containing medicines as appropriate and consumed for legitimate reasons, prescribed or OTC and were largely unaware of codeine's abuse and dependence potential and the possible harms. Some are totally unaware of their physical dependence to codeine despite an increase in their use; desire to continue to misuse and not being able to stop.

'It creeps up on you particularly if you've got an addictive personality.' (South African Male, 38yrs).

Awareness of habit forming use and related tolerance is a gradual and subtle process with often a sudden realisation that they were consuming more than normal, sometimes recreationally, with their *'bodies'* experiencing withdrawal and requiring more codeine containing medicines. This pattern of use would *'escalate'* especially as a result of on-going life events negatively impacting upon their lives reinforced by beliefs that *'codeine is my helper'* and *'codeine is my companion'*. We failed to pinpoint any cultural or gender related differences in the codeine use, misuse and dependence pathway, and speculate that this is due to the similarities in over the counter availability, legitimisation via prescriber and pharmacist routes of supply, and tolerance of alcohol and other drugs by wider societal forces.

Enabling beliefs

Enabling beliefs are held which facilitate self-permissiveness or reinforce a sense of entitlement to continue misusing codeine containing medicines. Two specific enabling beliefs were identified. The first centred on the misuse of codeine as a coping mechanism to manage and pre-empt the occurrence of physical and psychological distress, in many cases relating to severe trauma and distress.

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'Eventually there was not any pain, but I was scared of the pain in my mind'

(South African Male, 47yrs).

'Very quickly it was not enough in the morning to have me floating, feeling euphoric, and care free really. I was numb and I liked that. Codeine filled a void.'

(Irish Female, 32yrs).

The second enabling belief highlights the importance of adverse social circumstances in underpinning codeine dependence pathways, so justifying codeine misuse as a novel adaptive coping mechanism for managing life stressors.

'I actually abused the codeine to suppress my depression and to give that euphoric effect. I felt a lot of isolation, guilt and grief.' (South African Male, 36yrs).

Instrumental strategies

Once individuals grant themselves permission to use codeine containing medicines, their focus moves to instrumental (behavioural and cognitive) strategies to secure the medicines either through legitimate sources (multiple pharmacy purchasing, 'doctor hopping') or via the 'black market'. Participants explained:

'....it became a very engrained thing for me [to do].' (Male South African, 21yrs).

'An addiction will find a way, there's always a way. When you want something you will always find a way to get it.' (Irish Female, 45 yrs)

Legitimate sourcing involves behaviours that are deceptive and manipulative involving lying, faking illness or exaggerating symptoms to secure a script or supply of the medicine.

'Exaggerating symptoms and manipulating the conversation. I always had an answer.' (South African Male, 38yrs).

Habitual daily therapeutic and non-therapeutic use escalates with high dosages consumed within a short time frame. This often occurs as a result of failure to develop alternative

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1 coping strategies in relation to physical and emotional pain. Individuals recognise their
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5 problem with regard to their daily use and misuse which leads in turn to 'self-legitimisation'
6
7
8 based upon their need to use codeine inappropriately. This need to use inappropriately is
9
10 reinforced by a somatic 'recognition of liking the opiate effect', 'pleasurable effects' and
11
12 'codeine giving a buzz' with increased tolerance to adverse effects such as withdrawals,
13
14 medication overuse headache, nausea, constipation, tachycardia and palpitations.
15
16
17
18

Continued misuse and dependence

19
20 Adopting instrumental (behavioural and cognitive) strategies, individuals are likely to
21
22 continue to source and use and misuse codeine leading to dependence.
23
24

25 *'Addiction teaches you master manipulation. No matter what barriers you build*
26
27 *an addict's mind goes far beyond it.'* (Irish Female, 26yrs).
28
29 Beliefs held with conviction that 'codeine is my helper', 'codeine is my companion' and
30
31 'self-legitimisation' reinforce their continued misuse and dependence. This process is further
32
33 reinforced by pre-existing internal and external precipitating factors that predispose them to
34
35 risk of using, misusing and dependence, and a 'fear of stopping'.
36
37

38 *'My friends are gone and it's more a companion addiction. It feels like it has its*
39
40 *arm around you. It gives me that sense of security and that's what I'm struggling*
41
42 *with at the moment, it's to break that cycle.'* (Irish Male, 31yrs).
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DISCUSSION

48
49 Liese and Franz's (1996) cognitive developmental model of substance abuse is applied to the
50
51 in-depth narrative accounts of a sample of individuals experiencing codeine misuse and
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53 dependence. A cognitive behavioural mapping of the psychological processes involved in
54
55 transitioning from codeine use, to misuse and toward dependence is presented. Illustrations
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of the unique nature of these individuals' experiences and pathways by virtue of codeine as a legitimately sourced OTC opiate drug despite carrying risk of habitual and dependent use, the accidental nature of inadvertent dependence, and interplay with various forms of physical and emotional pain, which ultimately creates difficulties in successful recovery. Reinforcers, triggers, and thoughts are influenced by the thought processes around use, the pharmacy retail environment, and to a lesser extent prescribing patterns. Ultimately we sought to create greater understanding of codeine misuse and dependence in order to better inform the design of appropriate psychological treatment plans within existing OST management systems. The need to better understand and intervene with those requiring support for problematic codeine use is well evidenced in contemporary literature (Marr and Hill, 2015; Nielsen et al., 2015a; Nielsen et al., 2010; Pates et al., 2002).

Reliability and validity of the qualitative research process and the application of findings to Liese and Franz's (1996) cognitive developmental model of substance abuse are enhanced by the trustworthiness of the data used (Lincoln and Guba, 1985), which contain extensive and consistent similarities in the misuse and dependence phenomenon across the lived experiences and social circumstances in both countries, one in the developed, and the other in the developing world (Van Hout, et al., 2015b; Van Hout et al., 2015d). Horizontal and vertical consistencies are visible in the interpretation of the codeine misuse and dependence phenomena, despite variance in cultural contexts, social circumstances and regulatory availability in each country. In terms of 'generalisability' both qualitative studies were underpinned by a constructivist approach that guided sampling, data collection and analysis and we do not claim that 'generalisability' was achieved. However, reliability of the data sources and validity of the model is further supported by triangulation of these qualitative studies, and the generated model itself against accounts of pathways to codeine

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misuse reported by other studies conducted in the United Kingdom (Cooper, 2011, 2013b), and Australia (Nielsen et al., 2010; Nielsen et al., 2011; Nielsen, Cameron and Pahoki, 2013).

Borland (2014) advocates the need to consider how a *'hard to maintain'* behaviour is maintained, whether by the skills required to perform it, reinforcement patterns, cognitive thought processes, environmental factors, or a multiplicity of these factors, and that such behaviour is often not available for conscious awareness. Codeine misuse and dependence pathways appear to be maintained by the interplay between physiological determinants relating to pain, withdrawal and tolerance, and psychological influences. These influences include therapeutic need and use pre-empting of anticipated physical pain, recognition of appreciation of the opiate sedative therapeutic effect both for legitimate therapeutic and non-therapeutic reasons. Iatrogenic dependence contributes to the blurring between therapeutic use and problematic use of codeine containing medicines. Progression toward habitual use, dose escalation and medication of withdrawal and anxiety related symptoms appears mediated by external environmental triggers pertaining to availability, and internal meta-cognitions around physical pain and emotional distress, and the significance of the role codeine assumes for the user.

Given codeine users' unique experiences with a legitimately available opiate drug, lack of self-identification of habit forming use and pathways toward dependence, those patients do require psychological treatment interventions particular to their needs and in order for recovery to occur (Kean, 2015; Nielsen et al., 2011; Nielsen et al., 2015c; Van Hout, Delargy, Ryan, Flanagan and Gallagher, 2015a). The recognition of iatrogenic dependence in these patients warrants particular psycho-social interventions alongside the management of pain (Hard, 2014; Marr and Hill, 2015). Targeted psycho-social cognitive based interventions are warranted for this distinct group of opiate dependents (Kean, 2015; Van

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Hout et al., 2015a; Van Hout et al., 2015b; Van Hout et al., 2015d) and particularly those which target client conscious awareness of transitioning of misuse toward dependence (Borland, 2014; West, 2005: 2013). The model is intended to help therapists integrate cognitive and behaviour change strategies (for example mindfulness and acceptance), with an understanding of the distinct challenges for these patients in navigating pharmacies when in recovery, the role of trauma and distress in increasing their vulnerability, and coping mechanisms needed for successful rehabilitation. The role of codeine containing medicines appears grounded in self-regulation vulnerabilities (Khantzian, 1997; Nielsen et al., 2010). Cognitive conceptualisation can thus be reformulated during therapy, whilst gathering additional client information, experiences and evidence. Physiological, behavioural and social triggers, along with the interplay of anticipatory, relief-oriented, and permissive beliefs can contribute to relapse, even in the absence of physiological symptoms such as pain.

CONCLUSION

Psychological interventions for codeine dependence should take account of the reinforcing cycles of physical pain, emotional distress and codeine misuse. This model could provide psychological therapists working with individuals experiencing problems with codeine, misusing codeine and those with iatrogenic dependence with an enhanced understanding of the key concepts involved in these unique dependence and recovery pathways.

The authors assert that all procedures contributing to this work comply with the ethical standards of Waterford Institute of Technology, Ireland and the South African Medical Research Council and with the Helsinki Declaration of 1975, and its most recent revision.

The authors have no conflict of interest with respect to this publication.

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Figure 1 Cognitive Developmental Model depicting use, misuse and dependence of codeine containing medicines (Adapted from: Liese & Franz, 1996)

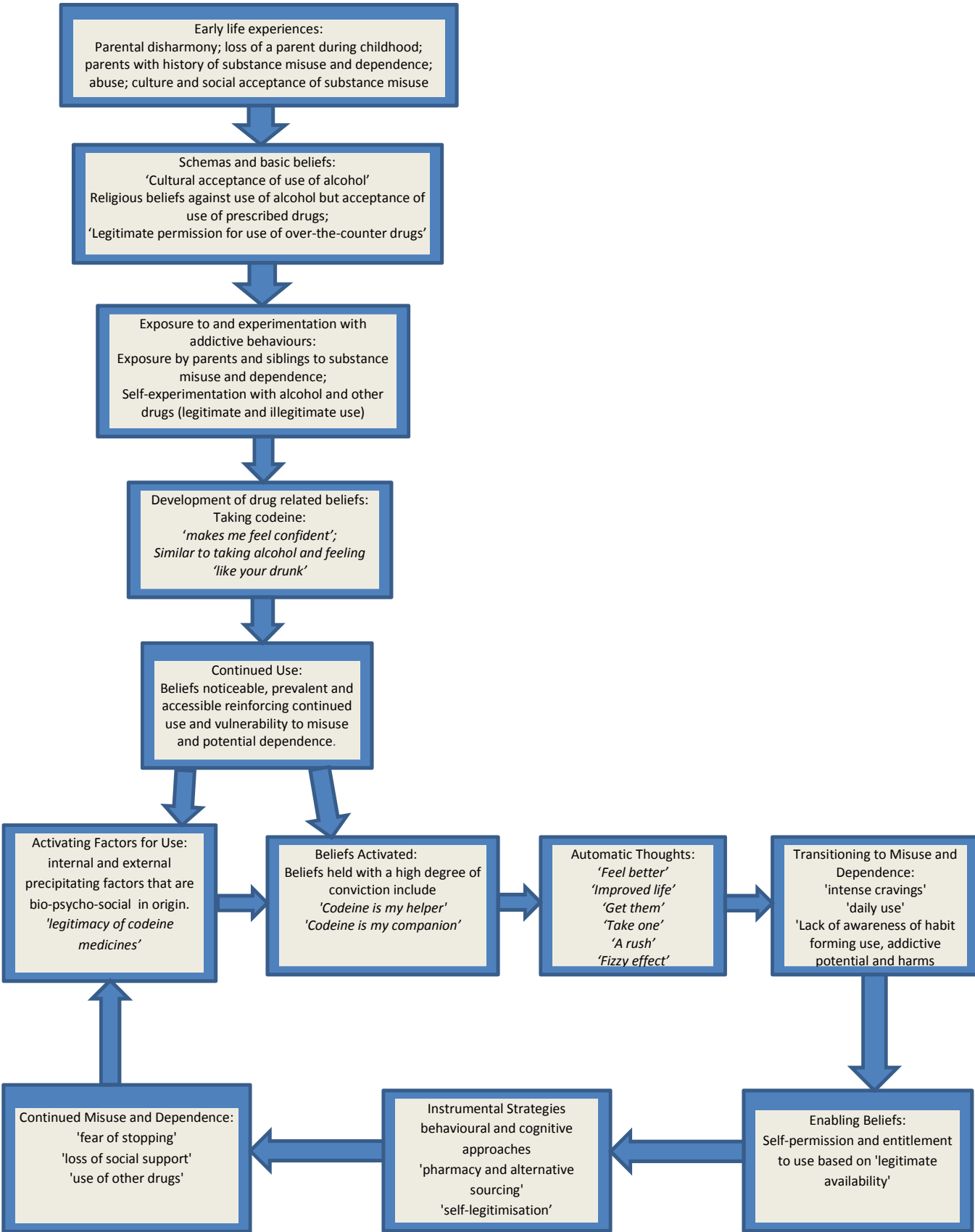


Table 1 Participant Profile

Ireland	South Africa
<i>Gender</i> 57% female 43% male.	<i>Gender</i> 40% female 60% male
<i>Age Range</i> 26 to 62 years Mean age of 39 years Standard Deviation 12.42	<i>Age Range</i> 21 to 74 years Mean age of 43 years Standard Deviation 9.93
<i>Employment Status</i> 52% unemployed	<i>Employment Status</i> 64% unemployed
<i>Use of Codeine</i> 72% used codeine within the last 12 months. 90% reported codeine analgesics as primary problematic drug.	<i>Use of Codeine</i> 80% used codeine within the last 12 months. 32% reported codeine analgesics as primary problematic drug. 20% reported codeine antitussive syrup as primary problematic drug.
<i>SDS Score</i> 80% scored 10 or above	<i>SDS Score</i> 52% scored 10 or above

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ABSTRACT

Background

Misuse of codeine containing medicines is an emerging public health issue.

Aims

We present the application of Liese and Franz's (1996) cognitive developmental model of substance abuse to the trajectory from legitimate codeine use for pain, toward that of therapeutic and other forms of misuse, and physical and psychological dependence. It illustrates a cognitive behavioural analysis of the experiences of codeine misusers – which 'surfaces' the specific beliefs, thoughts, emotions and behaviours of this group of hidden codeine dependent individuals, who are distinct and unique from other opioid dependent cohorts.

Methods:

In-depth one-to-one interviews with codeine misusers and dependent individuals in Ireland (n=21), and South Africa (n=25) are analysed and applied to Liese and Franz's (1996) cognitive developmental model of substance abuse.

Results

Misuse and dependence pathways are maintained by the interplay between physiological determinants relating to pain, withdrawal and tolerance, and psychological influences such as therapeutic need, pre-empting of anticipated physical pain, pleasure from the dreamy sedative opiate effect of codeine and relief of emotional distress. Progression toward habitual use and misuse for therapeutic and intoxication purposes appears mediated by external environmental triggers pertaining to availability, internal meta-cognitions around physical pain and emotional distress, and increasing importance of codeine in the life of the user.

Conclusion

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The concept mapping of codeine misuse and dependence presented here could provide psychological therapists working with individuals experiencing problems with codeine, misusing codeine and those with iatrogenic dependence, with an enhanced understanding of the key concepts involved in misuse and recovery pathways.

Key Words

Codeine, pain, addiction, cognitive behavioural therapy, opioid

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INTRODUCTION

Global trends in the misuse of prescription and over the counter (OTC) opioids are driven by prescribing trends, forms of patient self-medication and public availability (Collins and McAllister, 2006; Cooper, 2013a). Misuse definitions vary, but are broadly defined as *‘the use of a medicine, with or without a doctor’s prescription, clearly outside of accepted medical practice or guidelines, for recreational purposes or in the framework of self-medication, in greater dosages or for longer periods than were prescribed, in which the risks and problems associated with use outweigh the benefits’* (Casati, Sedefov and Pfeiffer-Gerschel, 2012:229-230). Public misuse and potential for misuse of codeine containing medicines in particular has received attention in recent times in Australia, the United Kingdom, Ireland, France and South Africa (McAvoy, Dobbin and Tobin, 2011; Nielsen et al., 2015c; Stannard, 2013; Tobin, Dobbin and McAvoy, 2013). Codeine, or 3-methylmorphine, is a short acting, weak to mid-range opiate (Tremlett, Anderson and Wolf, 2010). Codeine containing medicines are available (at the time of writing) in OTC formulations for the symptomatic relief of mild to moderate pain or cough (Derry, Karlin and Moore, 2013), and at varying strengths per country regulatory regime (Van Hout and Norman, 2015d).

Typical side effects of codeine include euphoria, altered perceptions and emotional responses to pain, and sedation, and development of tolerance within relatively short time frames on repeated use (Babalonis, Lofwall, Nuzzo, Siegel and Walsh, 2013; Frei, Nielsen, Dobbin, and Tobin, 2010; Nielsen, Cameron and Pahoki, 2010; Romach, Sproule, Sellers, Somer and Busto, 1999; Sproule, Busto, Somer, Romach and Sellers, 1999;). Harms relating to excessive and/or long term use of codeine containing medicines are well documented (Robinson, G. M., Robinson, S., McCarthy and Cameron, 2010), and often occurring in individuals with no history of substance use disorders or co-morbidity (Van Hout et al.,

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2014). Clinical profiles vary and are distinct from other opiate dependents, but include all ages, genders, alcohol and poly substance users, patients with chronic pain and/or underlying psychiatric conditions (Agyapong et al., 2013; ; Myers, Siegfried and Parry, 2003; Nielsen et al., 2008; Nielsen, Cameron and Lee, 2011; Nielsen et al., 2015 a,b; Otto et al., 2009; Robinson et al., 2010; Roussin, Bouyssi, Pouche, Pourcel, & Lapeyre-Mestre, 2013; Thekiso and Farren, 2010). Problematic codeine users do not easily recognise problematic use or dependence, and view themselves as different to other substance abusers (Cooper, 2013b; Marr and Hill, 2015; Nielsen et al., 2010; Nielsen et al., 2015a; Pates, McBride, Li and Ramadan, 2002; Romach et al., 1999).

Building on this 'uniqueness', we used concept mapping (Liese and Esterline, 2015) to apply Liese and Franz's (1996) cognitive developmental model of substance abuse to the accounts of two groups of individuals from Ireland (Van Hout, Horan, Santlal, Rich and Bergin, 2015b) and South Africa (Van Hout, Rich, Dada Bergin, 2015d) that experienced codeine use, misuse and dependence. Concept mapping according to Liese and Esterline (2015) advocate case mapping which when shared with the patient, can function as an intervention to support behaviour change by presenting methodical generated graphic representations of the client's dynamic relations and pathways toward substance dependence. Ultimately this mapping exercise could be used to better integrate specific cognitive and behaviour change strategies for those experiencing codeine misuse and dependence, and for therapists to better understand the unique challenges of this OTC opiate drug as it relates to the role of feelings and emotions as influences for use, environmental influences on behaviour change, and limits of self-control (Borland, 2014). We chose the model designed by Liese and Franz (1996) as it is compatible within current opiate substitution treatment (OST) and harm reduction approaches to treatment (Liese, 2014).

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METHODS

Aim

To apply Liese and Franz's (1996) cognitive developmental model of substance abuse to the in-depth narrative accounts of two samples of individuals from Ireland and South Africa experiencing codeine misuse and dependence. Ethical approval in South Africa was granted by the Ethics Committee of the South African Medical Research Council and by Waterford Institute of Technology and the National Drug Treatment Centre Board (NDTCB) in Ireland. Both studies were conducted in two very distinct regulatory regimes and aimed to garner unique individual and collective lived experiences of codeine misuse and dependence, from purposive samples of adult codeine misusers and individuals dependent on codeine (actively misusing and in recovery) in Ireland (n=21) and South Africa (n=25). Sampling for both the Irish and South African studies continued until saturation of the data occurred. We utilised extant narratives from these national studies and applied Liese and Franz's (1996) cognitive developmental model of substance abuse to concept map a cognitive behavioural analysis of the experiences of codeine misusers – which 'surfaces' their specific beliefs, thoughts, emotions and behaviours.

Selection of Participants

Recruitment of participants was facilitated by the National Head Office of the South African Council on Alcoholism and Drug Dependence (SANCA) and the NDTCB in Ireland which oversee national addiction treatment systems in respective countries. Both national treatment organisations nominated key gatekeepers in each treatment centre to provide their patients with information on the research study, and ask if they wished to partake in an interview. Informants were eligible for interview if they were: citizens of the country in which the research was conducted (Ireland or South Africa), 18 years of age or more, reported using

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codeine in excess of accepted medical guidelines, and scored 5 or more on the Severity of Dependence **Scale** (SDS) (Gossop et al., 1995), a measure of the psychological components of codeine dependence; a score of 5 or more on the SDS has been found to identify problematic codeine use with a high degree of accuracy (Nielsen et al., 2010). The demographic profile of the participants is reported in Table 1.

Insert Table 1 about here

Interviews

Interviews lasted between 30 and 90 minutes, and were conducted in treatment and private settings. The interview guide was developed based on the literature contained in an extensive scoping review on codeine conducted by the team (Van Hout et al., 2014). Questions centred on participant choices and decision making to use codeine (prescribed or over the counter), experience of sporadic and continued codeine use and misuse, reinforcers for use, misuse and dependence, sourcing, awareness of risk and abuse potential, adverse consequences and accessing of treatment services.

Analysis

Narratives were combined and analysed using the Empirical Phenomenological Psychological (EPP) five-step method (Karlsson, 1995). This method was used to interpret the meaning structure of lived psychological phenomena relating to the subjective codeine misuse and dependence experience. A dialectic understanding of the whole picture and **it's** part-components was used to create an incremental understanding of the relationship between the individual and the codeine containing medicine. Above the thematic level, higher levels of abstraction were grounded in user lack of awareness of habit forming use, self-

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legitimisation of use and the pre-empting of physical pain, management of emotional distress, and the invisible and isolating nature of dependence.

PSYCHOLOGICAL MODEL OF CODEINE MISUSE AND DEPENDENCE

Shaffer, LaPlante, and Nelson (2012) and Shaffer et al., (2004) view addiction as a syndrome with common causes, multiple opportunistic expressions, and with shared neurobiological and psychosocial antecedents, and experiences. This syndrome is cognisant of the role of individual characteristics, drug used, and environmental factors influencing transitions from use to misuse, and ultimately development of dependence. West (2005:2013) whilst recognising the heterogeneous nature of mechanisms underlying addiction, underscores the effect of motivational dysfunction through the unstable presence of responses, reflexes, impulses/inhibitory forces, desires, evaluations (beliefs), and overarching plans which interact with the individuals internal and external environment. Addictive behaviours (such as misuse of codeine) are viewed by Beck, Wright, Newman and Liese, (1993) as emerging from interplay between layers and levels of substance related (anticipatory, relief-oriented, and permissive) and facilitative beliefs, and high risk situations which activate automatic thoughts, and feelings of urges and cravings to use, within a cycle of addiction.

A complex interaction between cognitions (beliefs, thoughts, schemas), opinions, expectations, values, suppositions, behaviours, emotions, social relationships, cultural influences and physiological processes occurs (Alford and Nocross, 1991; Beck and Alford, 2000). Beck's cognitive model of addiction underpins cognitive therapy for substance use, through behavioural strategies centring on avoiding high risk situations, finding new coping mechanisms, and working with substance related beliefs. In Beck's model, the expectancies of substances are a key difference between those using problematically and those not, and with dysfunctional beliefs playing a role in the generation of urges (Beck, Wright, Newman

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and Liese, 1993; Liese and Franz, 1996), with beliefs and expectancies interacting with the emotional, environmental and physiological systems, and facilitating the development and maintenance of the disorder (Liese, Beck and Seaton, 1999).

The model, presented in Figure 1, applies Liese and Franz's (1996) cognitive developmental model of substance abuse, to concept map the cognitive behavioural analysis of the distinct and unique experiences of codeine misusers – which 'surfaces' their specific beliefs, thoughts, emotions and behaviours around misuse and dependence on the legitimately used OTC opiate drug, codeine. Liese and Franz's (1996) model includes a developmental component preceding the point of continued use activated by 'Activating Stimuli' (See Figure 1). These earlier factors include early life experiences, development of schemas, basic and conditional beliefs, exposure to and experimentation with substances and the development of drug related beliefs. This developmental process can influence potential vulnerability for codeine use, misuse and dependence. Seven stages are then depicted in the model of acute periods of codeine use, misuse and dependence with individuals not necessarily following a linear trajectory through the stages identified. The stages are (1) activating stimuli for codeine use; (2) beliefs activated; (3) automatic thoughts; (4) transitioning to codeine misuse and dependence (urges and cravings) (5) enabling beliefs; (6) instrumental strategies, and (7) continued codeine misuse and dependence. See Figure 1.

Insert Figure 1 about here

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Developmental Stages of Use and Misuse

The developmental component before point of ‘continued use’ (see Figure 1) explores early life experiences, development of schemas, basic beliefs, exposure to and experimentation with substances and the development of drug related beliefs. Early life experiences reported by participants centred on the ‘*loss of a parent*’ as a child and the emotional isolation experienced (South African Male , 45 yrs); ‘*parental disharmony*’ (South African Female, 43yrs; Irish Male, 31 yrs) and its negative impact on children; history of parents with substance misuse and dependence (South African Male, 47 yrs; Irish Male, 31 yrs; Irish Female, 42 yrs); parental physical and emotional abuse of children (South African Male, 36 yrs; South African Male, 47 yrs; Irish Male, 31 yrs); history of childhood behavioural problems and the use of medications to manage such challenging behaviours (South African Male, 42 yrs); ‘*religion*’ and associated beliefs formed and held that alcohol was forbidden but it was acceptable to use drugs that were legitimately available to purchase over the counter (South African Male, 45yrs); to the ‘*culture of sports*’ and the social acceptance for some sports, for example, ‘*rugby*’ and its association with ‘*alcohol use and misuse*’ (South African Male, 37 yrs).

Such early life experiences led some participants to develop beliefs that negatively impacted upon them. For example, feeling ‘*emotionally isolated*’ resulted from parental loss; ‘*low self-esteem*’ and feelings of worthlessness as a consequence of physical and emotional abuse from parents who misused or were dependent on substances. Exposure to and experimentation with substances occurred with many individuals reporting exposure ranging from parental or sibling addictions to alcohol, nicotine and other substances to participants themselves experimenting in the past as teenagers and young adults with ‘*ecstasy, ... speed, (Irish Female, 26 yrs) cannabis*’ (Irish Female, 26 yrs; Irish Male, 38 yrs; Irish Female, 42

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ys) and 'cocaine' (Irish Male, 50 yrs) to their own legitimate use of over the counter and prescribed medications for physical conditions related to pain symptomology.

Specific positive drug related beliefs were developed and maintained in relation to initial codeine use. For example, some participants described how initial use of codeine containing medicines would make them feel more socially 'relaxed' (South African Male, 37 yrs; South African Male, 41 yrs; South African Male, 47yrs; South African Male, 74 yrs) similar to the effects of alcohol, and also, would enhance their self-confidence. One 31 year old male Irish participant describes how:

'I was never confident enough... to just go out and talk to people.... And then when I was out, I used to take codeine and... I would be very chatty. It's almost like you're drunk...'

A 42 year old male Irish participant highlights how over time he increased his use of codeine to sustain feelings of confidence as were previously experienced:

'... three...just twenty four [codeine tablets] until they were gone but then I was getting to [the] sixties and I wasn't getting the effect anymore, well I was getting it a bit but I wasn't... as confident as I would be, ...[then]... stretching up to eighty four [codeine tablets] ...'

In sum, early life experiences, social norms and schemas about the cultural acceptability of drugs, combined with exposure to and experimentation with addictive behaviours appears to lead to positive beliefs about codeine which reinforces continued use.

Activating Factors

We distinguish between internal and external precipitating factors that predispose the person to risk for using codeine containing medicines. Internal precipitating factors occur within the individual, while external factors are contextualised beyond the individual's psychobiography and are situated either within relational or social contexts or both. Examples of internal factors are bio-psycho-social in origin and include individuals experiencing physical pain,

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emotional distress, depression, anxiety, stress related conditions, low self-esteem and a sense of an ‘*internalised loss*’ of control resulting from adverse life events and the use of codeine for reducing the perceived impact of psychological trauma.

External precipitating factors could include adverse life events such as lone parenting, unemployment, marital and relationship disharmony and divorce. These experiences of ‘*internalised loss*’ lead to relational conflict within social networks often resulting in social isolation and loss of support networks. Such internal and external precipitating factors are situated within a wider context of the ‘*legitimacy*’ status of codeine products, ‘*advertising of products*’, ‘*pharmacy availability*’ and ‘*over the counter*’ access to codeine containing medicines.

Beliefs activated

Many codeine dependent individuals do not realise they are dependent. Anticipatory and relief oriented beliefs are formed as a consequence of internal and external activating factors. Anticipatory beliefs that are convincingly held centre around the efficacy and pleasures associated with use and misuse whereby codeine is viewed as ‘*my helper*’ and ‘*companion*’. The presence of emotional pain and self-legitimation of use is a common belief.

‘Pain killers are not just for what is written on the back of the pack, they should add also pain relief from anxiety, depression and heartache.’ (Irish Female, 26yrs)

Automatic beliefs that codeine containing medicines can ‘*manage discrete episodes of physical pain*’, ‘*deny or suppress psychological symptoms*’ and ‘*lift up moods*’ are held. Such beliefs range from relief oriented beliefs, and involve the expectation of reprieve from physical and emotional symptoms, for example, helping them to relax, to beliefs relating to

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mood elevation and regulation. Such automatic or involuntary thoughts sustain the convincingly held beliefs that *'codeine is my helper'* and *'codeine is my companion'*.

'I wasn't expecting the high I got but I was very happy with its effects, it felt like the missing piece to my life.' (Irish Female, 26yrs)

Automatic thoughts

Involuntary or automatic thoughts are described as a consequence to deeply held beliefs, such as *'codeine is my helper'* and *'codeine is my companion'*. Such beliefs contribute to the development of the role of codeine as *'crutch'*; *'friend'* and *'helper'* in correspondence with dependence and to the detriment of *'real life social relations'*. Automatic thoughts triggered that are brief and spontaneous in relation to such basic beliefs include *'feel better'*; *'improved life'*; *'get them'*; *'a rush'*. As two Irish participants stated:

'I always deep down knew I was abusing it but some of my thoughts were, so what? It's serving you a purpose, it's making life better, it's only an over the counter drug. I used it for just under a year' (Irish Male, 30yrs).

'I used to take it [codeine tablets] then just to make myself feel better. When I used to get up and feel crap, I'll take it and feel instantly better. That is what I used to do. That is what I still do; and now it's like it has become part of my daily routine in my daily life. ... I'd get very uplifted when I was using that stuff [codeine tablets]' (Irish Male, 31 yrs).

Images as automatic thoughts were sometimes described, for example, *'fizzy effect'* following use of soluble codeine medications and its pleasurable effects. One male participant described how *'soluble codeines in water with that fizzy effect... it gave me the hit and it gave me a rush'* (Irish Male, 38 yrs). This association between drugs related beliefs and thoughts lead the individual to desire codeine containing medicines and *'...to consume in order to function throughout the day'*. This creates a context whereby certain convincingly held beliefs are maintained.

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Transitioning to misuse and dependence

Many individuals described their use of codeine containing medicines as appropriate and consumed for legitimate reasons, prescribed or OTC and were largely unaware of codeine's abuse and dependence potential and the possible harms. Some are totally unaware of their physical dependence to codeine despite an increase in their use; desire to continue to misuse and not being able to stop.

'It creeps up on you particularly if you've got an addictive personality.' (South African Male, 38yrs).

Awareness of habit forming use and related tolerance is a gradual and subtle process with often a sudden realisation that they were consuming more than normal, sometimes recreationally, with their 'bodies' experiencing withdrawal and requiring more codeine containing medicines. This pattern of use would 'escalate' especially as a result of on-going life events negatively impacting upon their lives reinforced by beliefs that 'codeine is my helper' and 'codeine is my companion'. We failed to pinpoint any cultural or gender related differences in the codeine use, misuse and dependence pathway, and speculate that this is due to the similarities in over the counter availability, legitimisation via prescriber and pharmacist routes of supply, and tolerance of alcohol and other drugs by wider societal forces.

Enabling beliefs

Enabling beliefs are held which facilitate self-permissiveness or reinforce a sense of entitlement to continue misusing codeine containing medicines. Two specific enabling beliefs were identified. The first centred on the misuse of codeine as a coping mechanism to manage and pre-empt the occurrence of physical and psychological distress, in many cases relating to severe trauma and distress.

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'Eventually there was not any pain, but I was scared of the pain in my mind'

(South African Male, 47yrs).

'Very quickly it was not enough in the morning to have me floating, feeling

euphoric, and care free really. I was numb and I liked that. Codeine filled a void.'

(Irish Female, 32yrs).

The second enabling belief highlights the importance of adverse social circumstances in underpinning codeine dependence pathways, so justifying codeine misuse as a novel adaptive coping mechanism for managing life stressors.

'I actually abused the codeine to suppress my depression and to give that euphoric

effect. I felt a lot of isolation, guilt and grief.' (South African Male, 36yrs).

Instrumental strategies

Once individuals grant themselves permission to use codeine containing medicines, their focus moves to instrumental (behavioural and cognitive) strategies to secure the medicines either through legitimate sources (multiple pharmacy purchasing, 'doctor hopping') or via the 'black market'. Participants explained:

'....it became a very engrained thing for me [to do].' (Male South African, 21yrs).

'An addiction will find a way, there's always a way. When you want something

you will always find a way to get it.' (Irish Female, 45 yrs)

Legitimate sourcing involves behaviours that are deceptive and manipulative involving lying, faking illness or exaggerating symptoms to secure a script or supply of the medicine.

'Exaggerating symptoms and manipulating the conversation. I always had an

answer.' (South African Male, 38yrs).

Habitual daily therapeutic and non-therapeutic use escalates with high dosages consumed within a short time frame. This often occurs as a result of failure to develop alternative

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1 coping strategies in relation to physical and emotional pain. Individuals recognise their
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5 problem with regard to their daily use and misuse which leads in turn to 'self-legitimisation'
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8 based upon their need to use codeine inappropriately. This need to use inappropriately is
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10 reinforced by a somatic 'recognition of liking the opiate effect', 'pleasurable effects' and
11
12 'codeine giving a buzz' with increased tolerance to adverse effects such as withdrawals,
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14 medication overuse headache, nausea, constipation, tachycardia and palpitations.
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Continued misuse and dependence

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20 Adopting instrumental (behavioural and cognitive) strategies, individuals are likely to
21
22 continue to source and use and misuse codeine leading to dependence.
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25 *'Addiction teaches you master manipulation. No matter what barriers you build*
26 *an addict's mind goes far beyond it.'* (Irish Female, 26yrs).
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29 Beliefs held with conviction that 'codeine is my helper', 'codeine is my companion' and
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31 'self-legitimisation' reinforce their continued misuse and dependence. This process is further
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33 reinforced by pre-existing internal and external precipitating factors that predispose them to
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35 risk of using, misusing and dependence, and a 'fear of stopping'.
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38 *'My friends are gone and it's more a companion addiction. It feels like it has its*
39 *arm around you. It gives me that sense of security and that's what I'm struggling*
40 *with at the moment, it's to break that cycle.'* (Irish Male, 31yrs).
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DISCUSSION

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49 Liese and Franz's (1996) cognitive developmental model of substance abuse is applied to the
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51 in-depth narrative accounts of a sample of individuals experiencing codeine misuse and
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53 dependence. A cognitive behavioural mapping of the psychological processes involved in
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55 transitioning from codeine use, to misuse and toward dependence is presented. Illustrations
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of the unique nature of these individuals' experiences and pathways by virtue of codeine as a legitimately sourced OTC opiate drug despite carrying risk of habitual and dependent use, the accidental nature of inadvertent dependence, and interplay with various forms of physical and emotional pain, which ultimately creates difficulties in successful recovery. Reinforcers, triggers, and thoughts are influenced by the thought processes around use, the pharmacy retail environment, and to a lesser extent prescribing patterns. Ultimately we sought to create greater understanding of codeine misuse and dependence in order to better inform the design of appropriate psychological treatment plans within existing OST management systems. The need to better understand and intervene with those requiring support for problematic codeine use is well evidenced in contemporary literature (Marr and Hill, 2015; Nielsen et al., 2015a; Nielsen et al., 2010; Pates et al., 2002).

Reliability and validity of the qualitative research process and the application of findings to Liese and Franz's (1996) cognitive developmental model of substance abuse are enhanced by the trustworthiness of the data used (Lincoln and Guba, 1985), which contain extensive and consistent similarities in the misuse and dependence phenomenon across the lived experiences and social circumstances in both countries, one in the developed, and the other in the developing world (Van Hout, et al., 2015b; Van Hout et al., 2015d). Horizontal and vertical consistencies are visible in the interpretation of the codeine misuse and dependence phenomena, despite variance in cultural contexts, social circumstances and regulatory availability in each country. In terms of 'generalisability' both qualitative studies were underpinned by a constructivist approach that guided sampling, data collection and analysis and we do not claim that 'generalisability' was achieved. However, reliability of the data sources and validity of the model is further supported by triangulation of these qualitative studies, and the generated model itself against accounts of pathways to codeine

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misuse reported by other studies conducted in the United Kingdom (Cooper, 2011, 2013b), and Australia (Nielsen et al., 2010; Nielsen et al., 2011; Nielsen, Cameron and Pahoki, 2013).

Borland (2014) advocates the need to consider how a ‘hard to maintain’ behaviour is maintained, whether by the skills required to perform it, reinforcement patterns, cognitive thought processes, environmental factors, or a multiplicity of these factors, and that such behaviour is often not available for conscious awareness. Codeine misuse and dependence pathways appear to be maintained by the interplay between physiological determinants relating to pain, withdrawal and tolerance, and psychological influences. These influences include therapeutic need and use pre-empting of anticipated physical pain, recognition of appreciation of the opiate sedative therapeutic effect both for legitimate therapeutic and non-therapeutic reasons. Iatrogenic dependence contributes to the blurring between therapeutic use and problematic use of codeine containing medicines. Progression toward habitual use, dose escalation and medication of withdrawal and anxiety related symptoms appears mediated by external environmental triggers pertaining to availability, and internal meta-cognitions around physical pain and emotional distress, and the significance of the role codeine assumes for the user.

Given codeine users’ unique experiences with a legitimately available opiate drug, lack of self-identification of habit forming use and pathways toward dependence, those patients do require psychological treatment interventions particular to their needs and in order for recovery to occur (Kean, 2015; Nielsen et al., 2011; Nielsen et al., 2015c; Van Hout, Delargy, Ryan, Flanagan and Gallagher, 2015a). The recognition of iatrogenic dependence in these patients warrants particular psycho-social interventions alongside the management of pain (Hard, 2014; Marr and Hill, 2015). Targeted psycho-social cognitive based interventions are warranted for this distinct group of opiate dependents (Kean, 2015; Van

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Hout et al., 2015a; Van Hout et al., 2015b; Van Hout et al., 2015d) and particularly those which target client conscious awareness of transitioning of misuse toward dependence (Borland, 2014; West, 2005; 2013). The model is intended to help therapists integrate cognitive and behaviour change strategies (for example mindfulness and acceptance), with an understanding of the distinct challenges for these patients in navigating pharmacies when in recovery, the role of trauma and distress in increasing their vulnerability, and coping mechanisms needed for successful rehabilitation. The role of codeine containing medicines appears grounded in self-regulation vulnerabilities (Khantzian, 1997; Nielsen et al., 2010). Cognitive conceptualisation can thus be reformulated during therapy, whilst gathering additional client information, experiences and evidence. Physiological, behavioural and social triggers, along with the interplay of anticipatory, relief-oriented, and permissive beliefs can contribute to relapse, even in the absence of physiological symptoms such as pain.

CONCLUSION

Psychological interventions for codeine dependence should take account of the reinforcing cycles of physical pain, emotional distress and codeine misuse. This model could provide psychological therapists working with individuals experiencing problems with codeine, misusing codeine and those with iatrogenic dependence with an enhanced understanding of the key concepts involved in these unique dependence and recovery pathways.

The authors assert that all procedures contributing to this work comply with the ethical standards of Waterford Institute of Technology, Ireland and the South African Medical Research Council and with the Helsinki Declaration of 1975, and its most recent revision.

The authors have no conflict of interest with respect to this publication.

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